What is claimed is:

1. A self-addressable electronic device comprising:

a substrate,

a first selectively addressable electrode, the electrode being supported by the substrate,

a permeation layer, the permeation layer being disposed adjacent the first selectively addressable electrode,

a current source operatively connected to the first selectively addressable electrode, and

an attachment layer adjacent the permeation layer.

2. The electronic device of claim 1, further including a second selectively addressable electrode, the second electrode being supported by the substrate.

3. The electronic device of claim 1 or 2, further including an attachment layer, the attachment layer being disposed upon the permeation layer.

4. The electronic device of claim 1, wherein the substrate includes a base and an overlying insulator.

5. The electronic device of claim 1, wherein the substrate is chosen from the following group: silicon, glass, silicon dioxide, plastic, or ceramic materials.

6. The electronic device of claim 4, wherein the base is chosen from the following group: silicon, glass, silicon dioxide, plastic, or ceramic materials.

7. The electronic device of claim 4, wherein the base material is silicon.

8. The electronic device of claim 4, wherein the insulator is silicon dioxide.

9. The electronic device of claim 1, wherein the substrate comprises a circuit pattern or board.

10. The electronic device of claim 2, wherein the first selectively addressable electrode and the second selectively addressable electrode are separated by an insulator supported by the substrate.

11. The electronic device of claim 10, wherein the insulator is chosen from the following group: silicon dioxide, plastic, glass, resist, rubber, or ceramic materials.

12. The electronic device of claim 10, wherein silicon nitride is disposed upon the insulator.

13. The electronic device of claim 1, wherein the current source is a direct current source.

14. The electronic device of claim 1, wherein the permeation layer is aminopropyltriethoxy silane.

15. The electronic device of claim 1, wherein the permeation layer and the selectively addressable electrode are separated by a buffer reservoir.

16. The electronic device of claim 1, wherein the electrode is chosen from the following group: aluminum, gold, silver, tin, copper, platinum, palladium, carbon, semiconductor materials, and combinations thereof.

17. A self-addressable electronic device comprising:

a substrate,

a plurality of selectively addressable electrodes, the electrodes being disposed upon the substrate,

a current source,

electrical connections to the electrodes, the electrical connections providing a selective current path from the current source, and

a permeation layer adjacent each electrode, forming addressable binding locations.

18. The electronic device of claim 17, further comprising a switch controller for selectively connecting said current source to said addressable electrodes.

19. The electronic device of claim 17, further comprising an attachment layer disposed on said permeation layer, forming addressable binding locations.

20. The electronic device of claim 17, wherein the electrode material is chosen from the group: aluminum, gold, silver, tin, copper, platinum, palladium, carbon, semiconductor material, and combinations thereof.

21. The electronic device of claim 17, further including an electronic insulative material disposed between said plurality of selectively addressable electrodes.

22. The electronic device of claim 17, wherein the plurality of addressable binding locations are arranged in an array.

23. The electronic device of claims 17, further including a cavity for holding a solution including binding entities, reagents, and analytes.

24. The electronic device of claim 17, wherein specific binding entities have been selectively transported and bound to said addressable binding locations, forming an addressed active location device.

25. The electronic device of claim 17, wherein the width of the binding locations on the device is between 0.5 microns and 200 microns.

26. The electronic device of claim 17, wherein the width of the binding locations on the device is between 5 microns and 100 microns.

27. A self-addressable electronic device comprising:

a substrate,

a plurality of selectively addressable electrodes, the electrodes being disposed upon the substrate,

a current source,

electrical connections to the electrodes, the electrical connections providing a selective current path from the current source,

individual buffer reservoirs associated with said electrodes,

individual permeation layers disposed adjacent said individual buffer reservoirs, forming addressable binding locations.

28. The electronic device of claim 27, further comprising a common reservoir for containing solutions including binding entities, reagents, and analytes.

29. The electronic device of claim 27, further comprising an attachment layer disposed on said permeation layer, forming addressable binding locations.

30. The electronic device of claim 27, wherein said addressable binding locations are arranged in an array.

31. The electronic device of claim 27, wherein the permeation layer is selected from the group comprising: functionalized hydrophilic gels, membranes, and porous materials.

32. The electronic device of claim 27, wherein specific binding entities have been selectively transported and bound to said addressable binding locations, forming an addressed active location device.

33. The electronic device of claim 27, wherein the width of the locations on the device is between 50 microns and 2 centimeters.

34. The electronic device of claim 27, wherein the width of the locations on the device is between 100 microns and 5 millimeters.

35. A method for electronically controlling hybridization of DNA from a solution containing specific binding and non-specific binding DNA sequences to a binding location, comprising the steps of:

placing the solution in contact with a first binding location including a first underlying electrode, and a second binding location including a second underlying electrode;

placing said first binding location at a positive potential, relative to said second binding location, concentrating DNA on said first location surface; and

placing said first binding location at a negative potential, relative to said second binding location, wherein said negative potential or current is sufficient to remove the non-specifically bound DNA sequences from said first binding location, but not sufficient to remove the specifically bound DNA sequences.

36. A method for electronically controlling hybridization of DNA from a solution containing specific binding and non-specific binding DNA sequences to first and second binding locations, comprising the steps of:

placing the solution in contact with the first, second, and a third locations;

placing said first and second binding locations at a positive potential and said third location at a negative potential, concentrating DNA on said first and second locations;

placing said first and second specific binding locations at a negative potential and said third location at a positive potential; and

placing said first and second binding locations at negative potentials, relative to said third location, wherein said negative potential or current is sufficient to remove the non-specifically bound DNA from said first and second locations, but not sufficient to remove the specifically bound DNA sequences.

37. A method for electronically controlling hybridization of DNA from a solution containing

specific and non-specific DNA sequences to a first binding location and then to a second specific binding location, comprising the steps of:

placing the solution in contact with said first, second, and a third location;

placing said first binding location at a positive potential and said second binding location at a negative potential, concentrating DNA on said first location;

placing said first binding location at a negative potential and said second binding location at a positive potential, concentrating DNA on said second location; and

placing said first and second binding locations at negative potentials, relative to said third binding location, wherein said negative potential or current is sufficient to remove the non-specifically bound DNA from said first and second locations but not sufficient to remove the specifically bound DNA.

38. The method of hybridization of claim 37 wherein said negative potential or current is increased or decreased incrementally.

39. The method of claim 36 or 37 wherein multiple specific and non-specific DNA sequences are applied to an array of binding locations.

40. A method for actively transporting DNA from a solution to a plurality of locations, comprising the steps of:

placing a solution containing DNA in contact with a first, second, third, and n-number of locations;

providing a positive potential on said first location relative to other locations, transporting DNA to said first location;

providing a positive potential on said second location relatively to said first location, transporting DNA to said second location;

providing a positive potential to said third location relative to the second location, transporting DNA to said third location; and

repeating the process through n-number of locations.

41. An electronic controlled method for combinatorial synthesis of a biopolymer, comprising the steps of:

forming a plurality of reaction locations on a substrate, each reaction location being individually electronically addressable;

forming an attachment layer upon each reaction location;

placing said reaction locations in contact with a solution containing a charged monomer-A;

selectively biasing those locations at which reaction A is to occur at an opposite charge to monomer-A, and biasing those locations at which no reaction A is to occur the same charge as monomer-A;

concentrating and reacting monomer A on the specific A locations;

removing solution containing unreacted monomer A;

placing said reaction locations in contact with a solution containing a charged monomer B;

selectively biasing those locations for which reaction B is to occur at the opposite charge of monomer-B, and biasing those locations at which no reaction B is to occur the same charge as monomer-B;

concentrating and reacting monomer B on the specific B locations; and

repeating the process with monomer-A, monomer-B, to monomer-N, for n-number of times until all biopolymer sequences are complete.

42. A method for replicating a self-addressable electronic device addressed with specific DNA sequences, comprising the steps of:

hybridizing the complimentary sequences to the specific DNA sequences addressed on a master self-addressable electronic device;

aligning unaddressed locations on a recipient self-addressable electronic device with the addressed locations on said master device; and

biasing the locations on said master device negative and the locations on said recipient device positive, transporting the complimentary sequences to said recipient device.

43. The method for replicating patterned sequences of claim 42, further comprising denaturing the complimentary sequences from the master template.

44. A system for the detection of fluorescent or colorimetric binding reactions and assays, comprising:

two or more addressable locations; and

a detector system positioned adjacent to at least one of the locations.

45. The detection system of claim 44, wherein the detector is an optoelectronic detector chosen from the group: photodiode, avalanche photodiode, or photomultiplier tube.

46. The detection system of claim 44, wherein the detector is an optoelectronic imaging detector chosen from the group: charged coupled device, cooled charged coupled device, intensified charged coupled device, or microchannel device.

47. The detection system of claim 44, wherein the detector is capable of detecting the emission of fluorescent radiation.

48. The detection system of claim 44 wherein the detector is capable of detecting the absorption of spectrophotometric radiation.

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